



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/773,674	02/06/2004	David Scott Nyce		7537

7590 05/04/2005

David S. Nyce
2633 Whistling Quail Run
Apex, NC 27502

EXAMINER

WEST, PAUL M

ART UNIT PAPER NUMBER

2856

DATE MAILED: 05/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	10/773,674		NYCE, DAVID SCOTT	
	Examiner		Art Unit	
	Paul M. West		2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

Specification

The disclosure is objected to because of the following informalities: In the detailed description of Figure 8 on page 12, the same reference number "15" is used to refer to both the fluid level and the spacing between the sensing element and the interior of a device. It appears that the spacing should be reference number --16--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 16, "the vessel" lacks antecedent basis. It would appear that claim 16 should be dependent on --claim 15-- instead of "claim 12." If this is the case it should be corrected accordingly.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Netzer or Larson.

Netzer teaches a capacitive sensor for sensing the level of a fluid, the sensor having multiple electrical conductors 402-405 forming a measured capacitance, the conductors being attached to a substrate 1 forming a sensing element, the conductors being electrically insulated from the fluid by a dielectric material (Col. 8, lines 65-67), the sensing element being positioned adjacent to the fluid and driven by an alternating current electrical signal (see Fig. 5A), the conductors being arranged on the substrate such that the electric field produced around the conductors penetrates the dielectric material and further penetrates the fluid (see Fig. 2) to cause a change in measured capacitance in response to a change in fluid level (Col. 8, lines 59-61). Netzer further teaches the conductors being a set of interdigital combs (see Fig. 4A).

Larson teaches a capacitive sensor for sensing the level of a fluid 31 in a vessel 11, having two electrical conductors 12 and 13 forming a measured capacitance, the conductors 12 and 13 attached to a substrate 11 which is made of a dielectric material (Col. 2, lines 31-33) and insulates the conductors from the fluid, the substrate 11 and conductors 12 and 13 together forming a sensing element which is positioned adjacent to the fluid and driven by an alternating current electrical signal 14, the conductors 12 and 13 arranged on the substrate 11 with a spacing such that the electric field produced around the conductors penetrates the dielectric material 11 and further penetrates a distance into the fluid 31 such that the measured capacitance changes in response to a

change in the level of the measured fluid (Col. 3, lines 37-41). Larson further teaches the conductors being a set of parallel lines (Col. 3, lines 1-2).

Claim 3 is rejected under 35 U.S.C. 102(b) as being anticipated by Larson.

Larson teaches a portion of the dielectric material 11 being positioned between the conductors 12 and 13 and shaped such that a depression is formed in the surface of the sensing element facing the fluid 31 (see Fig. 2A).

Claims 4, 5, 7, 12, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Netzer.

As to claim 4, Netzer teaches a flexible sensing element where the substrate is a flexible plastic sheet and the electrodes are printed conductive carbon (Col. 9, lines 52-54).

As to claim 5, Netzer's sensing element has a configuration that enables it to be cut to length.

As to claim 7, Netzer teaches positioning an electrically conductive shield (Fig. 7) parallel to the sensing element on the side opposite the measured fluid and connected to ground (Col. 10, lines 52-56).

As to claim 12, Netzer teaches a capacitive sensor comprising a sensing element and an electronic circuit module (see Fig. 5A), the sensing element having multiple electrical conductors 402-405 forming a measured capacitance, the conductors 402-405 being attached to a dielectric material which insulates them from the fluid (Col. 8, lines

65-67), the conductors 402-405 being electrically insulated from one another by spacing and being positioned adjacent to the fluid so that a change in the level of the fluid causes a change in the capacitance (Col. 8, lines 59-61), the electronic circuit module being electrically connected to the sensing element to provide a measurement of the capacitance between the conductors 402-405 and to provide an output for the indication of the fluid level (Col. 4, lines 41-46).

As to claim 15, Netzer teaches attaching conductors 402-405 to a dielectric wall of a fluid vessel (Col. 11, lines 28-31).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Netzer in view of Koon.

Netzer teaches all the limitations of the claim as set forth above, except an adhesive backing for mounting the sensing element to a dielectric wall of a vessel. Koon teaches using an adhesive backing 14 to mount a capacitive fluid level sensor 13 to the wall of a vessel 10. It would have been obvious to one of ordinary skill in the art to use Koon's adhesive backing with the sensing element of Netzer because, as Koon

Art Unit: 2856

teaches, it provides a quick and easy way to apply the sensing element to the wall of a vessel (Col. 2, lines 13-16).

Claims 8, 9, 11, 13, 14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Netzer in view of König.

Netzer teaches all the limitations as set forth above, but does not teach the sensing element being embedded into a dielectric wall of a vessel, or being embedded within a dielectric wall of a device that utilizes fluid level information. König teaches embedding a capacitive sensing element 35 into the wall of a vessel 31. It would have been obvious to one of ordinary skill in the art to use the teachings of König with the sensing element of Netzer because it provides for a more secure and less obstructive means for mounting the sensing element. It would have been further obvious to embed the sensing element of Netzer in any device or container for which it would be desirable to know the fluid level in or around, such as a bilge pump or waste tank, because Netzer's sensor is fully capable of being used for this purpose, and it provides a simple and efficient means for monitoring fluid level and controlling the operation of a pump.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Larson in view of König.

Larson teaches all the limitations as set forth above, but does not teach the sensing element being embedded within a dielectric wall of a device that utilizes fluid level information. König teaches embedding a capacitive sensing element 35 into the wall of a device 31. It would have been obvious to one of ordinary skill in the art to use

the teachings of König with the teachings of Larson because it provides for a more secure and less obstructive means for mounting the conductors, which form the sensing element. It would have been further obvious to embed the sensing element of Larson in any device or container for which it would be desirable to know the fluid level in or around, because Larson's sensor is fully capable of being used for this purpose, and it provides a simple and efficient means for monitoring fluid level and controlling the operation of the device.

Conclusion

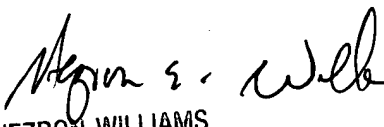
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yamanoue et al. teach a capacitive sensor attached to the outside of a vessel.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul M. West whose telephone number is (571) 272-8590. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2856

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


HEZRON WILLIAMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

HEZRON WILLIAMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800